Remarks

Claims 1 to 19 were previously pending. Claims 1, 2, 7, 9 to 11, 16 and 17 have been rejected under 35 U.S.C. 102(e) as being anticipated by United States Published Patent Application No. 2002/0191887 (Bidnyk). Claims 3 to 6, 8, 12 to 15, 18 and 19 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Bidnyk alone or in view of United States Patent No. 6,826,331 (Barwicz et al), a publication entitled "Monolithic Integrated Wavelength Demultiplexer Based on a Waveguide Rowland Circle Grating in InGaAsP/InP by He at al; and United States Patent Application No. 2004/0228602 (Livas et al).

The Applicant would like to thank the Examiner for taking the time to discuss the application and the prior art on the telephone on May 10, 2007.

Accordingly, the claims of the application have been amended to overcome the objections of the Examiner and to better define the invention in light of the cited prior art. In particular, claim 1 has been amended to define an undivided waveguide positioned between adjacent pairs of divided output waveguides for receiving background noise signals having wavelengths between said demultiplexed wavelength channels, whereby a measure of the signal to noise ratio can be determined for each of said wavelength channels by comparing the intensity of the noise signal received by the detector array with the intensity of each wavelength channel signal. The provision of both divided and undivided output waveguides is both novel and unobvious, as suggested by Examiner Healey.

Claim 10 has been amended to define a novel method, in which a plurality of wavelength channels having their nominal wavelengths centered on an ITU grid are demultiplexed and output respective output ports, i.e. one ITU wavelength channel is output each output port. Subsequently, each of the wavelength channels is divided into two portions, and the relative intensity of both portions is obtained for comparison to nominal values to determine the drift of said demultiplexed wavelength channels.

The Bidnyk reference simply teaches demultiplexing an optical signal into constituent wavelength channels having their nominal wavelengths centered on an ITU grid, and subsequently measuring the intensity of the entire wavelength channel. Bidnyk does not teach or even infer the added steps of separating each ITU wavelength channel into two portions and comparing the acquired measurements to nominal values to determine drift. The **single** detected measurement provided in the Bidnyk reference relates only to the signal **intensity** of each channel, and does not provide an indication of which direction the wavelength channel has drifted. Accordingly, the method defined in claim 10 is both novel and unobvious.

Claim 12 has been amended to clarify that the output waveguides are located so that the nominal intensity of the first and second portions would be the same, i.e. the divided waveguide splits each channel wavelength 50:50. Obviously, this measure will change as the signal drifts. Claim 15 has been amended to define the additional method step of calculating the signal to noise ratio based on the intensity of noise signals obtained from undivided waveguides positioned between the divided waveguides.

Claim 17 has been amended to more clearly define the structure of the divided output waveguides as having a single opening, a divider, and a pair of exits, as defined on page 4, line 28 to page 5, line 10, and as clearly illustrated in Figure 2. The openings are positioned relative to the demultiplexer and spaced apart relative to each other so that a single ITU wavelength channel is output each output waveguide. However, a divider positioned in each output waveguide separates the ITU wavelength channel into first and second portions and directs each portion to respective output ports. Accordingly, each output waveguide has one opening on the slab waveguide side and two exit ports proximate the detector array. The relationship between the demultiplexer, i.e. AWG 210, and the output waveguides 108 in the Bidnyk reference is similar to that of the present invention, i.e. a single opening of an output waveguide for each ITU channel. However, the apparatus of the present invention provides a divider in each output waveguide and a pair of exits for each opening for outputting both portions of the split ITU channel. Moreover, the **single** detected measurement per wavelength channel provided in the

Bidnyk reference relates only to the signal **intensity** of each channel, and does not provide an indication of which direction each individual wavelength channel has **drifted**. Accordingly, the apparatus defined in claim 17 providing two measurements per ITU wavelength channel is both novel and unobvious.

The Examiner has suggested that the Bidnyk et al reference teaches divided waveguides, as all star couplers include output waveguides, which are divided at the slab waveguide region. However, the output waveguides of conventional star couplers are evenly spaced apart and positioned to receive one ITU channel. The divided waveguides of the present invention include two split sections, which have the same opening for receiving a single ITU channel, but have two different exits. Each opening is spaced apart as in conventional demultiplexers. However, conventional output waveguides each have a single opening spaced apart from other openings, and a single exit spaced apart from other exits. The divided waveguide structure of the present invention, as defined in amended claim 17, is therefore novel and unobvious.

Claim 3 has been amended to depend from claim 17. Claim 18 has been amended to be consistent with new claim 17. Claims 20 has been added to ensure all aspects of the invention have been protected.

Applicant respectfully requests reconsideration of this application.

Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account No: 50-2810.

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Respectfully,

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